Vigyan Ashram Status Report

Volume 39 Issue 01 **January 2021**

Meet our DBRT 2020-21 Student : *Laxman Joru Ram Bagariya, Dang, Ajmer, Rajasthan – 305813.*

Laxman is 22 yrs old. He had studied upto 8th std. at night school run by Barefoot College in Rajasthan. He learnt carpentry skills and started earning by making wood furniture. He acquired skills of making wooden table, cupboard, doors and windows etc.

Barefoot college send him for DBRT course at Pabal. He has joined Vigyan Ashram in Nov 2020. Now he is learning electrical and metal fabrication skills.

(We are planning to introduce student from present batch in this space every month)

In this issue :

A] Visit to DBRT @ Narmadalaya (Madhya-Pradesh)

This year we have 12 students undergoing DBRT course from Narmadalaya, which is located at the bank of Narmada river in Madhya Pradesh. All theory classes are conducted online from Vigyan Ashram. We are guiding them in conducting practicals etc. These students are doing practical work at Narmadalaya. They will come to Pabal when pandemic is over for completing practicals requiring special tools. DBRT course alumni Mr Golu is working as a local instructor at Narmadalaya.

DBRT students with VA team

As a part of mentoring of local instructors and students, DBRT instructors from Vigyan Ashram Mr.Vishal Jagtap, Mr.Ganesh Pingle & Mr.Sunny Bansode visited Narmadalaya during 18th to 22nd January. They had conducted demonstration session for local instructors and for students. They also helped them in solving their difficulties. Setup of work space, documentation and record keeping system.

In the last few months students at Narmadalaya has done following activities:

i) They have built hydroponics fodder cultivation unit for dairy farm.

ii) Students have fabricated 11 doors for newly constructed building in their campus & also working on construction of 5000 ft^2 fabrication workshop.

B] FAB Academy 2021 :

Fab Academy batch-2021 course is started from 27th January. Fab-Academy is five months multi-disciplinary and hands-on training with emphasis on use of digital fabrication & machines. This year we have 5 students for this course.

This course is helpful to train Fab lab / innovation center managers. All 5 students will stay on Pabal campus & work on their respective project assignments. The course is conducted by Dr.Neil Gershenfeld and hosted by Fab Foundation. Before on-set of course, all instructors went through 'Instructor boot-camp' from 11th -18th January. Similarly, students boot camp was held during 21st -25th January to introduce students on course structure, new technology updates & skills required by participants.

Fab Class on Every Wednesday @ 6.30pm

C] Solar Installations :

We have installed 27 innovative solar equipment's for improving livelihood under SELCO foundation supported project. Beneficiaries contributed 30% cost of the equipment's and rest amount came as a subsidy from SELCO foundation. DBRT Students were involved in installation of solar milking machine, solar sewing machine, Solar computer & printing station, solar refrigerator, solar blacksmith blower. Students learnt solar panel installation, electrical connections, battery maintenance while doing this work. Apart from these installation students also performed various maintenance & repair work at Pabal campus.

Intervention	Units
Solar Milking Machine	10
Solar sewing machine	5
Solar fridge (100lit)	4
Black smithy	2
Solar Printing Station	6
Total	**27**

Blacksmithy blower powered by Solar Energy

D] 26th January celebration: Republic Day !!

Celebrations bring back positivity & team spirit much required in Pandemic & delayed educational activities. Republic day celebration was perfect occasion for us to celebrate. It was started with 'Shramdaan' on 25th evening. Staff & students cleaned campus and properly arranged scrap-yard.

On 26th flag hosting followed by cultural program with dance, drama, singing performances. After cultural program, different competitions were organized.

Ms Bhakti Bhave of Constitution and Responsible Citizenship Initiative (CRC Initiative) conducted session on ''संविधान आणि मी' on 25th Jan for DBRT and DIC students.

E] DBRT Program update:

Pabal Campus:

- Agriculture & Animal Husbandry section: Students did plantation of tomato, brinjal and oats. With the efforts of students and availability of irrigation facility (due to micro-irrigation & waste water recycling), we are progressing towards achieving self-sufficiency in fodder.
- Students visited milk collection center to learn milk collection & testing system.
- Workshop department: Students constructed staircase for new toilet block while learning basics of 'brick laying & civil construction'. Students prepared 'critical path method' chart for their work, formed teams and completed work while earning Rs.1000 as labor cost.
- Laxman & team fabricated 3 office tables for 'DIC department'. Total cost occurred for work was Rs.15600.00 including Rs.3000 labor cost. Students also learnt 'over hauling' of diesel engine' while servicing 'diesel genset'.

Steps construction for new toilet

- Home & Health department: Students did dried 2 Kg of methi leaves from 60 bundles of fresh vegetable. They made Tamarind sauce – 5Kg, linseed-moringa laddoos- 10 Kg and 15 Kg bakery products (bread, toast, khari etc) as their regular learning activities. They earned community service of Rs.2140.00 through this work.

Yusuf Meharali Centre (Panvel) campus :

- Students of YMC fabricated NFT hydroponics farming structure as part of their learning project. They are experimenting with using clay pots instead net-pots. They learnt basics of pottery & plumbing while fabricating this unit

Hydroponics system by DBRT @ YMC

- Students also started Azolla feeding trial in their dairy farm. Students have introduced Azolla farming as DBRT course work during December month. Now they using it on regular basis & keeping milk yield record to check its usefulness.

F] Technology Development & Design Innovation Centre (DIC) update:

- Exoskeleton for reducing efforts of labourer : Prathmesh build 1st prototype of forearm 'exoskeleton' support. Aim is to reduce efforts of agriculture labourer mainly for grass cutters, pruning tools, weeding operations. At present Prathamesh is studying its applicability by taking feedback from users & consulting field experts. Prathmesh, Sunny and team of DBRT students visited 'M/S Comau India Pvt Ltd.' @ shikrapur on 10th January to study 'exoskeleton' industrial application.

Prototype of Exoskeleton

- Suhas and Priyanka started lab testing of UV based portable water filter. Design is based on using UV-C based water pot lid and a water agitator for water disinfection. Unique advantage of filter is easy to use, movable and portable, cost effective application. At present filter is installed at Pabal for lab testing for bacteriological (H_2S strip) and user experience testing.
- Shubham started experiment on 'recycling of black water' using water hyacinth & MBBR system. Experiment aims to reduce COD (Chemical Oxygen Demand) of bio-toilet digester output water as per pollution control board standards (below 250 mg/l). During initial trials encouraging results of COD reduction by 1806 mg/lit (1860 to 30 mg /lit) in 24 days retention was recorded for 1:3 diluted water. He used it in hyacinth + duckweed based reed bed system. He is working on reducing retention time of the system.

Black water testing Setup

- DIC fellow Kalyani sold 175 boxes (35 Kg) of moringa-linseed fortified healthy laddoo including export order of 100 boxes (20kg) to California (USA). Kalyani is selling her products under brand name of ' Nutri-7'. She has her start-up 'Sahrudaya foods'. She is making these products by training women from Pabal village.
- Suhas & Sanket installed climate control system for solar powered polyhouse ventilation. Climate control system automatically controls fan-pad system of polyhouse to maintain inside temperature & humidity @ 30 ℃ & 60 % RH respectively. This system will maintain data log for further study on plant growth, pest attach etc. See current reading available on : https://thingspeak.com/channels/1093286
- Agro-waste composting project (WOS-B) : Sonal & team conducted field trials @ wadadara Loni, Midgulwadi and dhagewadi (kanhoor-mesai) for composting of Bajara straws of approx. 1 tons. We got very good result for rice -straw trials at Nigdale village (Rajgurunagar block). We are able to compost @ 2 ton of rice-straw in 40 days.

- Low cost supplements for Hydroponics: Akash has concluded his experiment of 'MBBR based fertigation' system for hydroponics spinach cultivation. Trials aimed at testing conversion of ammoniacal (NH_3) nitrogen into nitrate (NO_3) form by using bacterial culture & MBBR. Trial showed promising results of upto 160 ppm but he has also recorded very heavy pH reduction & nutrient toxicity. Presently he is working on over-coming this problem by separating nitrification system from fertigation tank.
- Mukesh has successfully tested python (language) and OpenCV library-based face recognition system. He is working on developing application for fruit harvesting using image processing.

G] Fab schools update Mukhai school

- A review meeting of Fab School project was conducted on 7th Jan with La foundation team.
- Prasad & Pooja tested & installed 'hydroponics vegetable farming unit' at Mukhai Schools. System host 60 lettuce plants with flood & drain based NFT structure. Pooja has also conducted 9th & 10th class students session hydroponics technique and its application in advance farming. Design files, BOM and assembly details are made available on-Hydroponics Structure | DESIGN INNOVATION CENTER (vigyanashram.blog)
- Pooja started establishment of 'digital fabrication' lab with arrangement of furniture, computers and ordering of 3D printer etc. For more details of school activities please visit - http://vadic.vigyanashram.blog/category/fab-school-for-fab-village-la-foundation/
- Pooja started work on preparing design files of 'Grain Thermal Disinfectant'. This technology will be useful for disinfection of grains from store grain pest. http://vadic.vigyanashram.blog/2021/01/27/cad-design-vibro-thermal-disinfector/

Installing grey water system @ Mukhai School

Installation of hydroponic system @ Mukhai

H] Entrepreneurship Development Program (EDP)

i) Technology based EDP & Faculty development for EDP – We are going to start the program from 1st Feb. A promotion & enrollment activity were done in this month. We have sent e-mails, social media messages to Engineering and science colleges.

iii) EDP incubation support & field visits-

- Sachin & Mahendra visited Chikhali @ 5th January to meet Pratibha Mukhekar and Shubham Yede. Shubham wanted to get manufacturing of his products done from outside i.e. with Pratibha.

- Ganesh, vishal & Sunny visited Swapnil Powar (Poultry egg incubation) & Mahesh (Buffalo farming) @ Dhule. Both of them are DBRT 2019 batch alumni and started their enterprise during COVID pandemic.

Heroes of the month :

- **Bakery @ Dantewada-** Baman, Binnu and Gopal started bakery in partnership with 'Bhumgaadi' farmers producer company & Dantewada district administration. District administration has helped them in bakery setup. It is state of art facility with baking & retail sales (café) facility. Indian Express published story on 13th January. Click here - Ragi bars to millet brownies, a bakery with flavours of Dantewada | India News,The Indian Express

Bakery @ Dantewada

- **Mr. Sagar Nalawade:** Sagar has started his poultry farming at Lakhangaon, Tal- Ambegaon (Pune) in the name of 'Shrushti Poultry Farm'. Sagar is beneficiary of 'online poultry farming EDP' program. At present he has farmed 13600 broiler birds & also planning to increase capacity in near future.
- **Mr. Amol Pansare :** Amol has started goat farming unit, Kanjawane, Tal- shirur (Pune). He has started with 20+1 capacity stock. He is beneficiary of September month 'online training program' and getting necessary hand-holding support for new venture.

I] IBT schools online training & classes:

IBT activities are gearing up after relaxation in pandemic restrictions. During January month, IBT students were busy rearranging their sections after lockdown, preparing science projects etc. VA team had conducted 3 online sessions for IBT schools covering topics like basics of carpentry, grafting, food preservation. These classes were attended by 400+ students-instructors from 25 schools.

Highlights of IBT activities –

- Students of Amboli (Pune) school constructed a cement concrete floor for flag pole post in School.
- IBT students @ Chikhali, fabricated dry leaves and grass cutter for making composting.
- Nande school students fabricated a pot-stand for ornamental plants. They learnt basics of metal fabrication through this activity.

Technovision : IBT team is busy in working with schools for Technovision Exhibition. It is the exhibition of student's projects done under IBT program. This year, we are organising it online. IBT team is visiting different schools and doing video recording of their projects. We are planning to launch Technovision on 26th Feb 2021.

Foundation top for flag post @ Amboli

Video Shooting of IBT projects for Technovision

J] DIY lab @ Pune :

'Do-It-Yourself' lab started functioning after relaxation in COVID lockdown. We are allowing limited students & lab members for training-cum-mentoring sessions. Students are also allowed to work on digital fabrication tools by observing required social distancing norms.

- 'Make Your Own Toy' session: We have conducted 4 online sessions in January. (combined participation of 240 + students). Students learnt toy making using ballon, scrap CDs etc.
- We are partnering with Muktangan Exploratory for 'Khel Khel Main' Toy making competition. We have conducted following session for competition participants :
  Use of Digital Fabrication for toy making – Yogesh Kulkarni (8th Jan), Making rockets from Ballon- Atul Yadav (13th Jan), Games using syringe – Aditi (20th Jan), Toys from CD – Rupesh (27th Jan).
- We have conducted two session on Toy making organized by SCERT. Making own musical instruments - Sohum Sunthankar took session on DIY Musical instrument and Prathemesh Darwade took session on DIY Trebuchet on 13th Jan.

k] Other tit-bit –

i) Wikipedia team has completed scanning of 12 books from different authors covering 1799 pages. They had also published new articles on- शेडनेट हाऊस , रासायनिक बंध, संयुगे.

ii) TATA pro-engage volunteering – We are getting technical support for designing from Tata volunteers. First batch of 2 volunteers completed work of CAD design. Now 6 new employees joined 'online volunteering support' program. They will help us on CAD design, Business model development & developing communication material for rural entrepreneurs.

iii) Vigyan Ashram participated in online Makers Mela. Online exhibition of Makers projects. Yogesh Kulkarni participated in the panel discussion at Change Makers Conclave on 24th Jan.

iv) Yogesh gave invited talk during induction program of first year students of Gajanan Maharaj college of engineering, Shegaon on 23rd Jan.

v) Management committee meeting: VA-MC meeting was held online on 17th Jan. Various project related issues were discussed and sanction were taken.

vi) Weather record – Rainfall of the month -12.99 mm (Total – 681.13 mm) ,Max temp-39.00˚C, Min Temp –14.00˚C , Humidity – 61 % , Water height in well – 6.20 Mtr.

vii) Energy consumption record- Electricity unit – III Phase -1728 units , I Phase Export- 322 units, Import- 608 units. DG used – 06.15 Hrs. Quality of power : Number of interruptions :59 , Normal voltage : 82.87%, No supply : 4.02 %, low voltage :13.52 %, No data: 0%

viii) Animal Husbandry section update – Milk production – 507.90 Kg , Goat- Weight gain NA , Poultry Egg production – 114 dozens (FCR – 2.17)

ix) Biogas consumption – Dung used- 1110 Kg , Gas produced- 25.27 M^3, Two wheeler record– NA

x) www.dsttara.org – 1655 (New visitor –1459 Repeated- 196) , www.vigyanashram.com – 1269 (New visitor – 1005 Repeated-264)

K] Data Report: shorturl.at/fCO25

(Work of VA is supported by Asha for Education, Praj foundation, EATON Foundation, L & T infotech, SPA Education Foundation, Megger (I) Pvt Ltd, SELCO India foundation, INDUSA Endowment, Govt of Chhattisgarh, Savitribai Phule Pune University, Suzlon foundation, Dept of Science & Technology, and many individuals and foundations)

Photo Gallery:

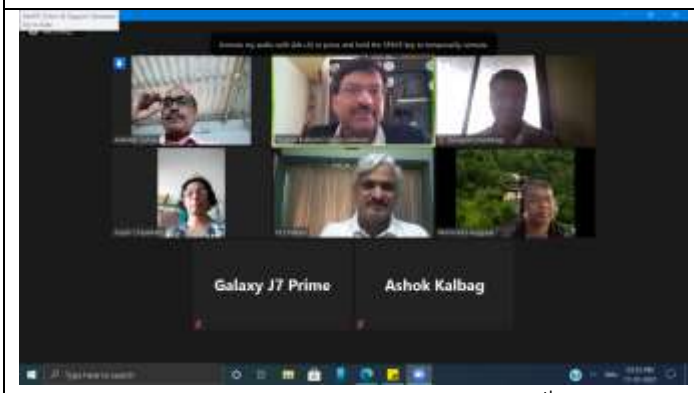
Team Vigyan Ashram on 26th Jan 2021

Agro waste composting @ Midgulwadi

DBRT alumni Swapnil Pawar at his poultry farm with Ganesh sir

Maintenance of Solar battery

Composter Stacking system and composter was dispatched on 26th Jan



Management committee meeting 17th Jan

Visit to Milk collection center

Tomato plantation plot

Fresh Spinach from Polyhouse for kitchen

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